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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM (U)

(THROUGH 15 MARCH 1967)

MARCH 1967

S-2138/AP-4

Prepared Jointly by
The Central Intelligence Agency
and
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**AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM
THROUGH 15 MARCH 1967**

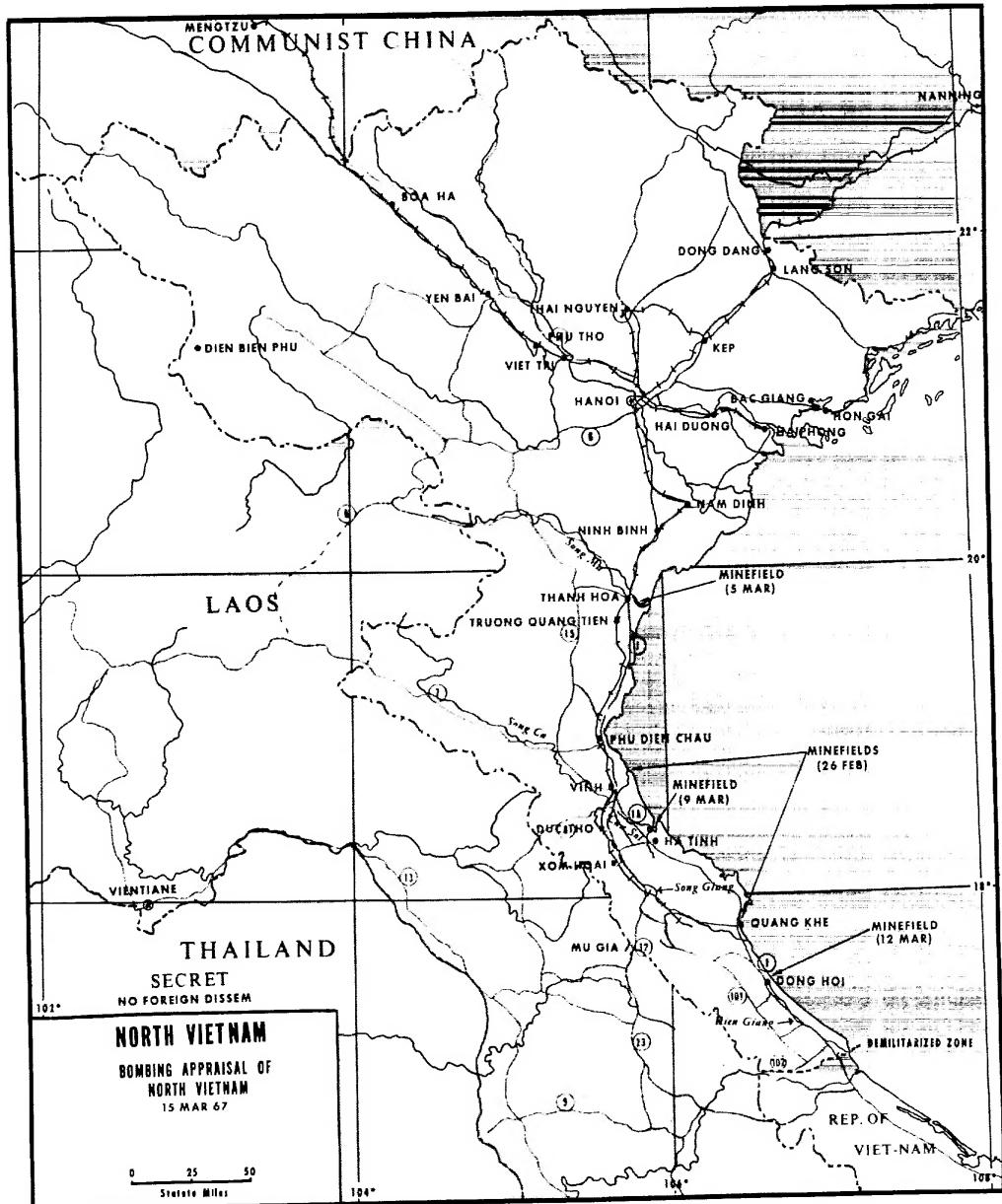
FOREWORD

This report is prepared on a monthly basis at the request of the Secretary of Defense for an evaluation of certain effects of the ROLLING THUNDER program. The report covers three general areas of concern: Effects on Military Targets; Leadership and Public Reactions; and Effects on the NVN Economy. The discussion of political effects is limited to those developments within North Vietnam which relate to Hanoi's attitude toward continuing the war and the effects the ROLLING THUNDER attack has on civilian morale in North Vietnam.

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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM
THROUGH 15 MARCH 1967

SUMMARY

1. (S/NFD) The preponderance of air strikes against North Vietnam during February and early March continued to be against lines of communications (LOC's). Also struck were the Thai Nguyen Iron and Steel Combine, military barracks, an explosive storage area, an ammunition depot, thermal power plants, and FOL storage sites. Generally unfavorable weather conditions hindered air operations and in some instances precluded damage assessments. The aerial mining of the estuaries of several rivers south of the 20th Parallel and naval bombardment of land LOC's and transshipment areas, introduced new elements into the interdiction campaign.

2. (S/NFD) Rail capabilities remained relatively unchanged. The Hanoi-Vinh line received the bulk of the air strikes and was also subjected to naval bombardment. The line may have been closed for through rail service for about half of the reporting period. On the Hanoi-Lao Cai line, use of rail ferries continues to be necessary at the site of the destroyed Viet Tri bridge. In spite of the damage to the rail system, new construction continues to be evident. Several rail bypass bridges are under construction and several yards are being bypassed. In addition, there are indications that dual gauge construction on the Hanoi-Dong Dang line will be extended from Kep toward Hanoi.

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3. (S/NFD) The over-all condition of the North Vietnamese highway system probably improved slightly. The bulk of the interdiction effort continued to be against the principal roads south of the 20th Parallel. There was a marked increase in the number of vehicles destroyed during this period. The damage and destruction of vehicles in the week following TET was greater than for the entire month of January but the rate during the reporting period was considerably lower than the average for the last half of 1966.

4. (S/NFD) Since the beginning of the air campaign the North Vietnamese have devoted considerable effort to the development and improvement of their water transport system. During the past several months there has been a noticeable trend toward increased use of water transport to supplement or replace other, more vulnerable modes of transport. Most of the waterborne activity on the inland waterway routes was concentrated in coastal estuaries. However, the aerial mining of the waterways and naval bombardment of coastal routes will provide additional obstacles to the North Vietnamese in transporting supplies and material to the southern part of the country, and will also place a heavier burden on the more vulnerable land transportation networks.

5. (S/NFD) The continued expansion and improvement of North Vietnam's air defenses has thus far not affected the scope of US air operations. It does, however, indicate that Hanoi

has the determination and foreign resources to proceed with a substantial program of air defense development.

6. (S/NFD) The cumulative effects of the air strikes have limited North Vietnam's capability for sustained large scale conventional military operations against South Vietnam. However, the North Vietnamese still retain the capability to support activities in South Vietnam and Laos at present or increased combat levels and force structures.

7. (S/NFD) All signs emanating from North Vietnam appear to indicate that -- as the propaganda suggests -- the leadership is as determined as ever to press on with the war despite the additional military pressures applied by the US in the last several weeks. The populace in the capital shows no open signs of demoralization, but the cumulative effect of the growing hardships and shortages resulting from the bombings may well be wearing down the resistance of the people. There has in fact been some recent evidence that certain elements of the DRV populace do not have blind faith in the regime's propaganda line on the war. There was no indication, however, that this disillusionment had taken the form of active agitation against the regime's policies nor has there been any evidence to indicate that resentment harbored by other elements of the population has in any way weakened the leadership's policy of prosecuting the war.

8. (S/NFD) Damage to the North Vietnamese economy during the reporting period resulted primarily from strikes against three important electric power plants and the Thai Nguyen Iron and Steel Combine, all of which were struck on a large scale for the first time. The Hon Gai power plant was extensively damaged and probably is at least temporarily out of operation. The extent of damage to the power plants at Bac Giang and Viet Tri cannot be determined at this time. If all three plants have been put out of operation, the amount of capacity destroyed to date by the ROLLING THUNDER program will have increased from 59,000 kilowatts to 102,000 kilowatts -- 55 per cent of the national capacity. Preliminary field analysis of aerial photography of Thai Nguyen indicates only light to moderate damage in several areas of the extensive iron and steel complex.

9. (S/NFD) The cumulative effects of the bombing have been such that the 1967 State Plan stresses still further the need for increased regional self-sufficiency, intended, at least in part, to offset the disruptive effects of the bombing. Agriculture will be the focal point of the 1967 State Plan to develop regional self-sufficiency. Much of the increased industrial production at the local level will be in support of agriculture in order to boost labor productivity.

10. (S/NFD) Although food supplies in North Vietnam are not

critically low, there is increasing evidence that the 1966 short-fall in rice production has placed an additional strain on the economy. The North Vietnamese apparently intend to attack the increasingly tight food situation before it becomes critical by increasing food imports and substituting other domestically produced foods for rice. Seaborne imports of bulk foodstuffs during the first quarter of 1967 alone probably will exceed 60,000 metric tons, more than three-fourths of the total imported for all of 1966.

11. (S/NFD) There was no significant damage to petroleum bulk storage facilities during the reporting period. Seaborne imports of petroleum continued at a high level, totaling 23,800 metric tons in February. One delivery by tanker and two seaborne deliveries of petroleum in drums have been made from Shanghai so far in 1967, possibly representing a significant change in import procedures. It is not yet clear, whether the petroleum delivered is part of the 34,000 metric tons of petroleum diverted to China in mid-1966 and thought to have been transshipped by rail or originated there. If these imports are part of the diverted cargoes, estimated supplies of petroleum on hand in mid-March are probably not less than 60,000 metric tons, equivalent to more than 100 days of supply. If not, then North Vietnamese supplies would be somewhat greater.

12. (S/NFD) Seaborne imports of miscellaneous and general

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cargo increased during February but remained well below the monthly average for 1966. Seaborne exports from North Vietnam remained at a low level because of the continued absence of apatite exports and the lag in shipments of cement and coal. Seaborne exports of coal increased in February but remained far below the level for the first quarter of 1966, before air strikes damaged the coal facilities at Cam Pha.

13. (S/NFD) Cumulative measurable damage to economic and military facilities and equipment in North Vietnam inflicted by air strikes through February 1967 is estimated at \$220 million. In addition to these costs, there are many other losses to the economy and to the military establishment which cannot be assigned meaningful values.

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Effects on Military Targets

1. (S/NFD) The preponderance of air strikes against North Vietnam during February and early March continued to be against lines of communications (LOC's). Also struck were the Thai Nguyen Iron and Steel Combine, military barracks, an explosive storage area, an ammunition depot, thermal power plants, and POL storage sites. Road transport capabilities probably improved slightly and rail line capabilities remained relatively unchanged. There was no significant interdiction of transportation in the central and northern parts of the country. In comparison to the very low destruction rate in January, there was a marked increase in the number of vehicles destroyed, particularly during the week following the TET (Vietnamese Lunar New Year) standdown (8-14 February). Strikes against coastal watercraft, following TET, were the highest ever reported for a single week, but on a monthly basis the rate of destruction was comparatively low. Generally unfavorable weather conditions hindered air operations and in some instances precluded damage assessments. The aerial mining of the estuaries of several rivers south of the 20th Parallel and naval bombardment of land LOC's and transshipment areas, introduced new elements into the interdiction campaign.
2. (S/NFD) Attacks against rail facilities decreased from the previous reporting period. The Hanoi-Vinh line received the

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bulk of the air strikes and was also subjected to naval bombardment south of Truong Quang Tien. The line may have been closed for through rail service for about half of the reporting period. At the end of the period this line probably was closed for through traffic south of Ninh Binh. Even when open, through service on the line was limited by the need to shuttle supplies around or across bridges which cannot support the weight of a locomotive. On the Duc Tho-DMZ line south of Xom Hoai a 25-mile section of rail line may be in use by modified (flanged-wheel) vehicles. On the Hanoi-Lao Cai line, use of rail ferries continues to be necessary at the site of the destroyed Viet Tri bridge. In addition, the line was closed for several days between Yen Bai and Boa Ha. The Hai Duong Railroad Yard on the Hanoi-Haiphong line was struck but no bomb damage assessment has been reported and the line is considered operational. This was the first time that this line has been struck since November 1966.

3. (S/NFD) In spite of the damage to the rail system, new construction continues to be evident. Several rail bypass bridges are under construction and several yards are being bypassed. A standard-gauge rail bypass has recently been completed to the south around Thai Nguyen and work has started on dual gauging the meter-gauge Hanoi-Thai Nguyen line. In addition, there are indications that dual gauge construction on the Hanoi-Dong Dang

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line will be extended from Kep toward Hanoi.

4. (S/NFD) The over-all condition of the North Vietnamese highway system probably improved slightly during the period. The bulk of the interdiction effort was against the principal roads south of the 20th Parallel with most of the road cuts on Routes 1A and 15. Although Route 1A was subjected to extensive and continued cratering which caused some deterioration to certain segments, sufficient road repair and maintenance forces were available to return it to a serviceable condition. However, many of these repairs are increasingly makeshift and of low quality. While this tends to reduce the capacity of the Route, it is still in a serviceable condition and sufficient to meet the requirements of the North Vietnamese. Route 15, near the Mu Gia Pass, was repeatedly attacked and seeded with delayed action bombs. Vehicle traffic on this segment of Route 15 was severely limited during most of early March.

5. (S/NFD) There was a marked increase in the number of vehicles destroyed during this period. The damage and destruction to vehicles in the week following TET was greater than for the entire month of January but the level for the reporting period was considerably lower than the average for the last half of 1966. Nearly all the vehicles attacked were traveling or parked along Routes 1A and 15. The increased vehicle sightings and activity in

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the southern Panhandle of North Vietnam tends to indicate that the supplies delivered along the coast during the TET standdown are still being moved.

6. (S/NFD) Since the beginning of the air campaign the North Vietnamese have devoted considerable effort to the development and improvement of their water transport system. During the past several months there has been a noticeable trend toward increased use of water transport to supplement or replace other, more vulnerable, modes of transport. The activity during TET provided a vivid demonstration of the North Vietnamese waterborne logistic capability. Notable among the coastal craft sighted during the TET standdown was a class of 120-foot freighters whose cargo-carrying capacity has been estimated at 200 short tons. Although this class vessel has been previously noted in North Vietnamese waters, the 19 reported during TET -- although not firmly identified in the NVN inventory -- exceeds any previous estimate of their number and significantly enhances the North Vietnamese coastal transport capability.

7. (S/NFD) Most of the waterborne activity on the inland waterway routes was concentrated in coastal estuaries. The aerial mining of the estuaries of the Kien Giang, Song Giang, Song Ca, Song Ma, and Cua Sot will further harass the principal transshipment points south of the 20th Parallel. In general, alongside berthing facilities south of the 20th Parallel have been destroyed or reduced in

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capacity and North Vietnamese coastal vessels have been forced in many instances to unload "over-the-beach." Using this procedure, cargo is restricted in size to what can be manually carried ashore. The recent appearance of Soviet K-61 amphibious tracked vehicles at the Quang Khe coastal transshipment point may be an attempt by the North Vietnamese to alleviate this problem. The K-61 is an un-armored amphibious vehicle with a cargo capacity of 3.2 short tons overland and 6.0 short tons on water, and, acting as a lighter, will enable North Vietnamese coastal transports to offload heavy, large cargo units despite the general lack of alongside berthing facilities.

8. (S/NFD) In spite of continued damage to the transport system in North Vietnam, it remains able to support the civilian economy, military requirements, and the insurgency in South Vietnam and Laos. However, the aerial mining of the waterways and naval bombardment of coastal routes will provide additional obstacles to the North Vietnamese in transporting supplies and material to the southern part of the country, and will also place a heavier burden on the more vulnerable land transportation networks.

9. (S/NFD) North Vietnam continues to expand and improve its air defense system. Photography confirmed a new surface-to-air missile (SAM) support and assembly area 12-miles west of Haiphong -- the second in the area. A strike against this target on 11 March resulted in large secondary fires and explosions. An unoccupied

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SAM site was detected by photography on 2 March just north of the DMZ. However, the high volume of SAM firings during the attacks on the Thai Nguyen Iron and Steel Combine on 10 and 12 March underscores North Vietnam's desire to maintain most of its SAM units in the vital regions near Hanoi and Haiphong.

10. (S/NFD) One MIG-17 was shot down and two were reported damaged during the 10 March strike on Thai Nguyen. During this attack MIG-21 aircraft fired at least one air-to-air missile with no damage to US aircraft. The continued expansion and improvement of North Vietnam's air defenses has thus far not affected the scope of US air operations. It does, however, indicate that Hanoi has the determination and foreign resources to proceed with a substantial program of air defense development.

11. (S/NFD) The cumulative effects of the air strikes in North Vietnam have caused multiple management and logistic problems and have limited North Vietnam's capability for sustained large scale conventional military operations against South Vietnam. Pursuit of the war effort is becoming progressively more costly, more difficult and more time-consuming for Hanoi. However, the North Vietnamese still retain the capability to support activities in South Vietnam and Laos at present or increased combat levels and force structures.

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Leadership and Public Reactions

12. (S/NFD) During the past month, North Vietnam played in a lower key its 28 January offer to talk with the US in return for a cessation of the bombings. At the same time, in a series of official statements the regime gave greater stress to the Vietnamese people's determination to press on with the war despite the cost. Typical of these latter statements was a commentary in the party daily Nhan Dan of 14 March written in reaction to the US air strikes against the industrial complex at Thai Nguyen. The commentary accused the US of intensified bombing against industrial and economic establishments as well as densely populated civilian areas. It concluded by stating that the Vietnamese people "never fear the threats and challenges of US imperialism. Our clear cut answer is: we shall fight unremittingly till complete victory."

13. (S/NFD) All signs emanating from North Vietnam appear to indicate that -- as the propaganda suggests -- the leadership is as determined as ever to press on with the war despite the additional military pressures applied by the US in the last several weeks.

25X1C

25X1C

[redacted] the populace in the capital shows no open signs of demoralization.

25X1C

[redacted] the cumulative effect of the growing hardships and shortages resulting from the bombings

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may well be wearing down the resistance of the people. There has in fact been some recent evidence that certain elements of the DRV populace do not have blind faith in the regime's propaganda line on the war. This evidence was obtained from the recent interrogation of over 100 residents of the southern coastal region of the DRV who were captured while fishing off the coast or after infiltrating into South Vietnam over the past year. Some of those questioned felt that if North Vietnam stopped its support of the war in the South, the bombings would cease. They were skeptical of the regime's claim that the bombings were in retaliation for substantial losses inflicted on US forces in the South.

14. (S/NFD) The same individuals doubted Hanoi's claims on the number of aircraft shot down and felt that the regime had not been able to mount a successful air defense. They were generally resentful of the government's forced labor programs for the repair of bomb damage and of the disruption of their normal activities. There was no indication, however, that this disillusionment had taken the form of active agitation against the regime's policies nor has there been any evidence to indicate that resentment harbored by other elements of the population has in any way weakened the leadership's policy of prosecuting the war.

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Effects on the Economy

15. (S/NFD) Damage to the North Vietnamese economy during the reporting period resulted primarily from strikes against three important electric power plants -- at Hon Gai, Bac Giang, and Viet Tri -- and the Thai Nguyen Iron and Steel Combine, all of which were struck on a large scale for the first time. Aerial photography of Hon Gai taken on 11 March reveals extensive damage to this power plant, and it probably is at least temporarily out of operation. Loss of the plant will deny power to coal mining in the Hon Gai area and to coal-loading operations at the ports of Cam Pha and Hon Gai. The extent of damage to the power plants at Bac Giang and Viet Tri cannot be determined at this time. Loss of the Bac Giang plant would deny power supply to the adjacent Phu Lang Thuong chemical fertilizer plant. Loss of the plant at Viet Tri would be even more significant because it provides the power for the large Phu Tho fertilizer plant as well as power for an adjacent chemical plant. In addition, destruction of the Viet Tri power plant would reduce the power supply to Hanoi by possibly 15 per cent. If all three plants have been put out of operation, the amount of capacity destroyed to date by the ROLLING THUNDER program will have increased from 59,000 kilowatts to 102,000 kilowatts -- 55 per cent of the national capacity. Preliminary field analysis of aerial photography of Thai Nguyen indicates only light

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to moderate damage in several areas of the extensive iron and steel complex as a result of air strikes.

16. (S/NFD) The cumulative effects of the bombing have been such that the 1967 State Plan stresses still further the need for increased regional self-sufficiency, intended, at least in part, to offset the disruptive effects of the bombing. Furthermore, Deputy Premier Pham Hung, speaking at a February conference for the dissemination of the State Plan, admitted that there was a decline in some sectors of the economy during 1966 and that North Vietnam would have to forgo even more its aspirations for economic development in modern industry.

17. (S/NFD) The Deputy Premier described the Plan as "changing the course of economic construction and focusing on the development of the local economy." In developing the local economy and emphasizing regional self-sufficiency, the goal of the North Vietnamese leadership is to make a district, province, or other logical geographic area capable of supplying its own needs. Each area would supply its own food requirements and have sufficient industry -- small power stations and machine shops as well as rice and textile mills -- to supply the needs of agriculture and consumers. The continuing threat of the destruction of North Vietnam's modern industry did not, however, prevent the Deputy Premier from calling for some investment in modern industry,

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especially when needed to expand foreign trade or to support decentralized local industry. There is evidence that the Communist countries are continuing to supply equipment and advisors for industrial aid projects in North Vietnam.

18. (S/NFD) The 1967 Plan conference was held prior to TET, much earlier than normal, probably to exhort the party cadres to improve their leadership in the new year. Many of the difficulties encountered in 1966, particularly in the evacuation and manpower mobilization programs and in the attending problems of distribution, were attributed to the inability of the cadres to organize properly and to respond to the needs of the people. Low productivity in agriculture also has been blamed on the poor leadership of the party cadres. Recent information indicates, however, that some effective planning is now being done to improve support for the evacuation and dispersal programs. Purchasing and selling cooperatives are being expanded to provide food and consumer goods for evacuated and dispersed persons, greater attention is being given to overcoming housing shortages at relocation sites, and organizations providing cooked food and beverages in both rural and urban areas are being greatly expanded.

19. (S/NFD) Agriculture will be the focal point of the 1967 State Plan to develop regional self-sufficiency. Much of the increased industrial production at the local level will be in

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support of agriculture, primarily by providing simple implements to boost labor productivity in agriculture. Although food supplies in North Vietnam are not critically low, there is increasing evidence that the 1966 short-fall in rice production -- estimated to have been about 300,000 metric tons below the annual average of recent years -- has placed an additional strain on the economy. In addition, cold weather and the cumulative effects of the bombing have delayed the transplanting of some of the 1967 spring rice crop -- normally about one-third of the annual harvest. All available people -- school children, cadres, workers, and evacuated people -- have been asked to help in the transplanting. Militia and guerrilla forces also were told to support the agricultural effort in Military Region 3, located in the area from Hanoi and Nam Dinh south to Nghe An Province.

20. (S/NFD) The North Vietnamese apparently intend to attack the increasingly tight food situation before it becomes critical by increasing food imports and substituting other domestically produced foods for rice. Seaborne imports of bulk foodstuffs during the first quarter of 1967 alone probably will exceed 60,000 metric tons, more than three-fourths of the total imported for all of 1966. Increased emphasis also is being given to the production of sweet potatoes in the current winter-spring season, partly at the expense of acreage for spring rice. Sweet potatoes, although less popular

than rice, will provide a more dependable and higher yielding crop. Increased regional self-sufficiency also will help alleviate the problem of food distribution.

21. (S/NFD) There was no significant damage inflicted against petroleum bulk storage facilities during the reporting period. Seaborne imports of petroleum continued at a high level, totaling 23,800 metric tons in February. All but 3,400 metric tons of this total consisted of bulk deliveries from the Soviet Far East. Petroleum import procedures have undergone a significant change in 1967. One delivery by tanker and two seaborne deliveries of petroleum in drums have been made from Shanghai. There are reports that one more bulk and one packaged delivery by sea from Shanghai are planned. It is not clear, yet, whether or not the petroleum represented by these deliveries is part of the 34,000 metric tons of petroleum destined for North Vietnam but diverted to China in mid-1966. Prior estimates of supply in North Vietnam assumed the transshipment by rail of this diverted petroleum. If these imports are in fact part of the diverted cargoes, supplies of petroleum on hand in mid-March probably are not less than 60,000 metric tons, equivalent to more than 100 days of supply. If these imports are not part of the diverted cargoes, supplies would be somewhat more.

22. (S/NFD) Seaborne imports of miscellaneous and general cargo increased during February, totaling 29,000 metric tons, but

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SECRET NOFORN DISSEM 00050005-4

remained well below the monthly average of 34,400 metric tons for 1966. Most of these shipments originated in Soviet ports and included trucks, tractors, cranes, and other machinery and equipment. Seaborne imports of bulk foodstuffs during February totaled 22,600 metric tons, approximating the large amount imported in January, and consisted largely of Soviet wheat flour, Chinese rice, and maize from Rumania. Seaborne exports from North Vietnam remained at a low level because of the continued absence of apatite exports and the lag in shipments of cement and coal.

Seaborne exports of coal increased in February to 74,800 metric tons, but remained far below the level for the first quarter of 1966, before air strikes damaged the coal facilities at Cam Pha.

23. (S/NFD) Cumulative measurable damage to economic and military facilities and equipment in North Vietnam inflicted by air strikes through February 1967 is estimated at \$220 million. (See Tab B) Of the total, more than three-fifths is attributed to the cost of damage inflicted on the economy and the remaining to damage inflicted on military facilities and equipment. In addition to these costs, there are many other losses to the economy and to the military establishment which cannot be assigned meaningful values.

* US dollars are used throughout this appraisal.

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 RESULTS OF STRIKES ON NVN TARGETS a/ THRU 11 MARCH 1967

TABLE 360

Fixed Targets	Targets		Targets Struck		No. Attacks	Strike Sorties	% Destroyed or inactive because of air strikes.	<u>g/</u> % Of National Capacity
	National <u>c/</u> Capacity (x 1000)	JCS <u>d/</u> Targeted No(*) %	No. (*)	%				
Barracks	443 men	65	41.08	50	25.3	265	2506	23.89
Ammo Depots	112.6 MT	18	100	16	84.7	57	1234	69.3
POL Storage *	133.4 MT	13	100	13	100	77	658	85.5
Supply Depots	10550 SqFt	29	42.48	21	44.4	57	650	15.42
Power Plants	187 KW	20	94.5	10	61.0	40	321	25.2
Maritime Ports	7.8 ST/DY	8	95	6	44	27	235	12.8
Railroad Yards	33.7 ST/DY	4	78	3	54	35	301	14.0
Explosive Plant	1 MT	1	100	1	100	3	28	71
Iron and Steel	300 MT(FIG)	1	100	1	100	2	100	
Airfields	23	11	4	19 <u>d/</u>	12	359	19	
Naval Bases	15	5	3	42 <u>d/</u>	20	219	19.5	
Bridges	1,529	61	50	292	280	4	45.0 (of those tgted)	
Commo Install	45	5	2	2	15	20		
Radar Sites	160	5	5	73	430	42.9		
SAM Sites	134		58	112	388			
Locks & Dams	43	8	2	10.6	2	10	5.3	
Ferries	34		11	7	44			

Total Sorties:	10,512	Results	<u>f/</u>
Armed Recce Sorties			
105,275	Vessels	4570	8750
	Vehicles	2605	2481
	RR Stock	1530	1883

a/Assessments are based on best information received, will be refined as more accurate information becomes available.
b/Strike plus flak suppression sorties. Some applied to multiple targets; in this summary assigned to principal target.

c/National capacity in 1,000's where measurement shown.
d/Percentages of national capacity where appropriate.

e/Also numerous attacks during armed recce and other missions.

f/Also numerous installations, AA sites, bridges, etc, attacked and road and rail cuts made.
g/Per Cent inactive due to dismantling or abandonment of facilities as a result of air strikes.

(*) These columns are not additive, since the number of installations, both targeted and struck in some cases, apply to more than one category of targets. (i.e., barracks, supply and ammo depots).

NOTE: For comparative purposes.

US world-wide ammo storage capacity is 6,936,000 metric tons (CONUS 5,719,000 MT).

US world-wide military POL storage capacity is 15,452,000 MT; national US commercial capacity is 151,325,000 MT; approximate average \$ value of 1 MT of POL products is \$28.

US world-wide military supply depot covered storage space is 137,100,000 sq. ft. (CONUS 121,300,000 sq. ft.).

Total kilowatt capacity of power plants serving metropolitan areas: New York - 7.6 million; Chicago - 6 million; Washington (DC and MD suburbs only) - 2.4 million.

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Value of Damage to Economic and Military Facilities and
Equipment Attacked Under the ROLLING THUNDER Program
1965 Through February 1967

<u>Economic Facilities and Equipment</u>		<u>Military Facilities and Equipment</u>	
<u>Direct Losses</u>	<u>Million US \$</u>	<u>Direct Losses</u>	<u>Million US \$</u>
Railroad/Highway Bridges	23.8a/b/	Barracks	18.4a/
Transportation Equipment	37.6	Ammunition Depots	4.7
Electric Power Plants	12.5a/	Supply Depots	3.9
Petroleum	6.9a/	Airfields	0.4
Manufacturing Facilities	2.1	Radar and Communications	2.8c/
Railroad Yards	2.1a/	Sites	7.9a/
Maritime Ports	1.5	SAM Sites	1.6
Miscellaneous Armed		Naval Bases	30.3
Reconnaissance	1.3	Aircraft	8.1
SUBTOTAL, Direct Losses	87.8	Naval Craft	5.4
		Miscellaneous Armed	
		Reconnaissance	
		TOTAL, Direct	83.5
<u>Indirect Losses</u>		<u>Total</u> <u>Million US \$</u>	
Exports	17.7	Economic	136
Agriculture d/	25.5	Military	84
Fishing	5.0	TOTAL	220 e/
SUBTOTAL, Indirect Losses	48.2		
TOTAL, Direct and Indirect	136.0		

a/ Estimate is incomplete because of inadequate post-strike photography.
b/ Of the total, \$3.5 million is estimated to have been expended to date on the repair of damaged and destroyed bridges and \$20.3 million is estimated for complete restoration in the future of bridges damaged or destroyed. In addition, \$1.3 million would be required to make temporary repairs to presently unrepaired bridges.
c/ Including only JCS-targeted radar and communications sites. The estimated cost of radar destroyed by armed reconnaissance air strikes has been transferred to the cost given for "Miscellaneous Armed Reconnaissance."
d/ It should be noted that losses of agricultural crops are arbitrarily attributed entirely to the indirect effects of the bombing. An unknown part of these losses is in fact due to weather and other natural causes.
e/ Excluding the cost of trucks destroyed and damaged in Laos and economic and military facilities and equipment destroyed and damaged by US naval operations along the coast of southern North Vietnam.

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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM

THE WHITE HOUSE:

Vice President	1 Cy
Gen Maxwell Taylor	1 Cy
Mr. Bromley Smith	5 Cys

DEFENSE:

SECDEF	2 Cys
ASST SECDEF (ISA)	2 Cys
ASST SECDEF (Systems Analysis)	2 Cys
ASST SECDEF (PA)	1 Cy

BUREAU OF THE BUDGET
TREASURY (Secretary)

1 Cy

USIA

1 Cy

AID

1 Cy

NASA

1 Cy

NSA

5 Cys

STATE

18 Cys

AEC

1 Cy

FBI

1 Cy

NIC

1 Cy

ACDA

1 Cy

CHAIRMAN, JCS

1 Cy

DIRECTOR, JOINT STAFF

1 Cy

J-1

1 Cy

J-3

2 Cys

J-4

1 Cy

J-5

1 Cy

J-6

1 Cy

SACSA

1 Cy

NMCC

3 Cys

ARMY:

CHIEF OF STAFF	2 Cys
DCSOPS	1 Cy
ACSFOR	1 Cy
ACSI	1 Cy
ACSI-CI	1 Cy
ACSI-Eastern	1 Cy
STAG	1 Cy

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NAVY:

CHIEF OF NAVAL OPERATIONS	2 Cys
DNI	1 Cy
OP-921E	1 Cy
OP-922Y1	1 Cy
OP-922Y2	1 Cy
OP-92B1	1 Cy

AIR FORCE:

CHIEF OF STAFF	2 Cys
ACS, I/USAF	1 Cy
AFNINDE	6 Cys
AFNIEBB	1 Cy
AFISI (Spec Investigation)	1 Cy
AUL (Air Univ Library)	1 Cy

MARINE CORPS:

COMMANDANT	1 Cy
G-2	1 Cy
CINCPAC	2 Cys
CINCPACAF	1 Cy
CINCUSARPAC	1 Cy
CINCPACFLT	1 Cy
COMUSMACV	2 Cys
7AF	2 Cys
COMSEVENTHFLT	1 Cy
COMATKCARSTRIKEFORSEVENTHFLT (CTF 77)	1 Cy
CINCLANT	1 Cy
CINCSSTRIKE	1 Cy
CINCSAC	1 Cy
SAC 544	1 Cy
CINCTAC	1 Cy
AFSTRIKE	1 Cy
CONTIC	1 Cy
CINCALCOM	1 Cy
CINCEUR	1 Cy
CINCUSAREUR	1 Cy
CINCUSAFE	1 Cy
CINCNAVEUR	1 Cy
CINCCONAD	1 Cy
CIA	125 Cys

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DIA:

DIADDR	1 Cy
DIADD	1 Cy
DIASC-1	1 Cy
JS	1 Cy
CO-2C	1 Cy
AP	1 Cy
AP-2	1 Cy
AP-2C2	10 Cys
AP-2D1	1 Cy
AP-2D2	1 Cy
AP-3	1 Cy
AP-4	1 Cy
AP-4A	1 Cy
AP-4A2 (Pent)	6 Cys
AP-4A2 (AHS)	4 Cys
AP-4B4	2 Cys
AP-4C	3 Cys
AP-7	2 Cys
AP-8	2 Cys
XX	1 Cy
JT	1 Cy

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